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NATIONAL DAM SAFETY PROGRAM. PELTO DAM (INVENTORY NUMBER N.Y. 6--ETC(U)
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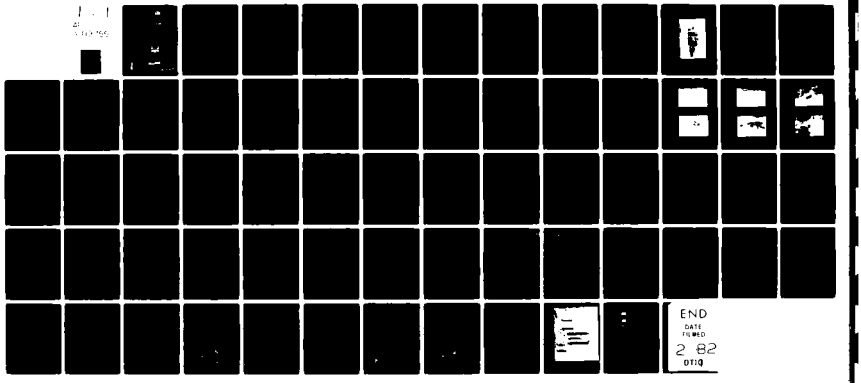

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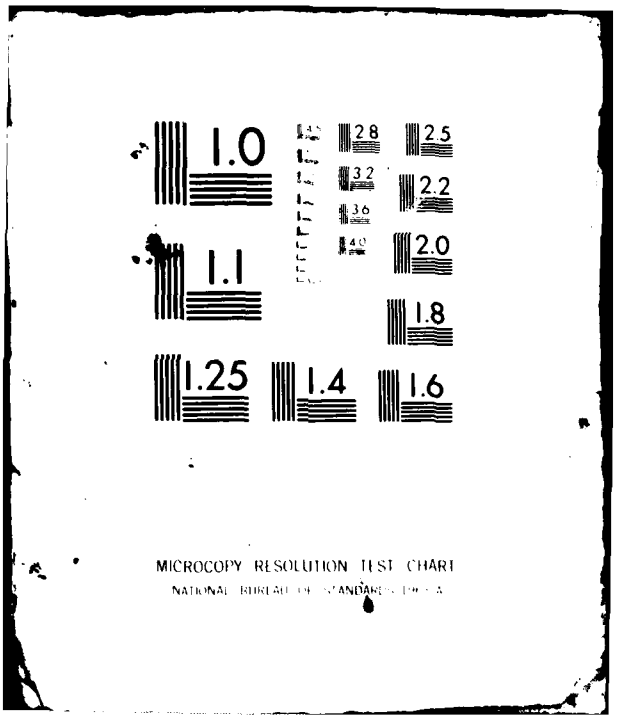
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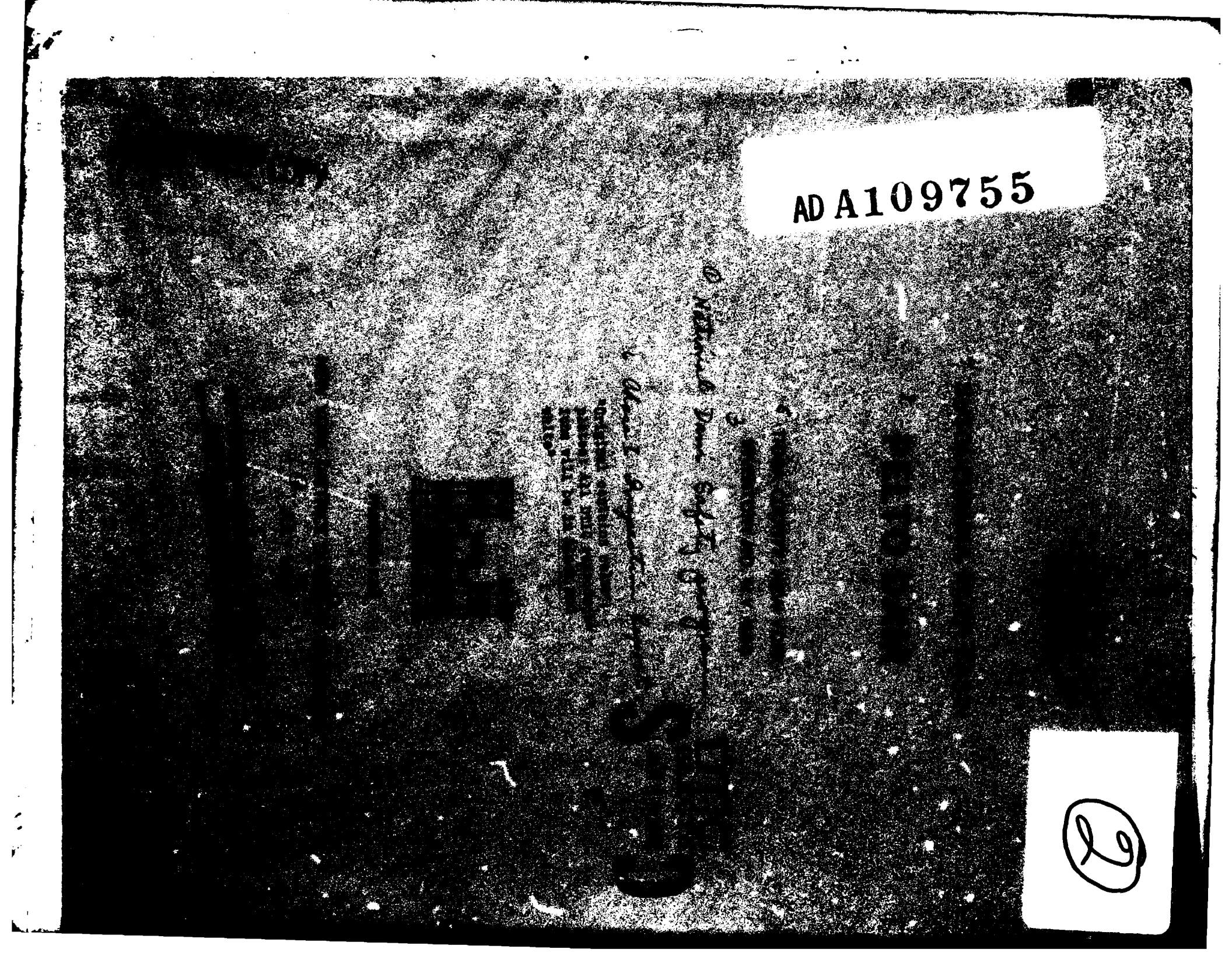
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National Dam Safety Program
Visual Inspection
Hydrology, Structural Stability

Pelto Dam
Susquehanna River Basin
Tioga County

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report provides information and analysis on the physical condition of the dam of the report date. Information and analysis are based on visual inspection of the dam by the performing organization.

Based on the evaluation of the existing conditions, the condition of the Pelto Dam is considered to be good. The examination of documents and visual observations did not reveal conditions which constitute a hazard to human life or property.

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

The spillway capacity was evaluated according to the recommended procedure and was found to pass the required spillway design flood of 100 percent of the Probable Maximum Flood (PMF). Therefore, the spillway capacity is rated as adequate.

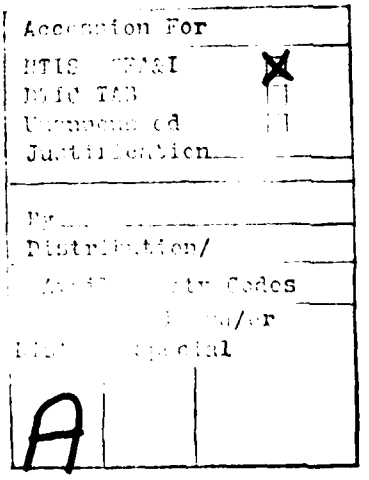
PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the spillway design flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.



PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
PELTO DAM
N.Y. 680
DEC I.D. NO. 67-2068
SUSQUEHANNA RIVER BASIN
TIOGA COUNTY, NEW YORK

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(Continued)

TABLE OF CONTENTS
(Continued)

*Not included due the lack of pertinent data.

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam:	Pelto Dam N.Y. 680
State Located:	New York
County Located:	Tioga
Stream:	Burheight Creek (a secondary tributary of Catatonk Creek)
Date of Inspection:	March 25, 1981 and April 30, 1981

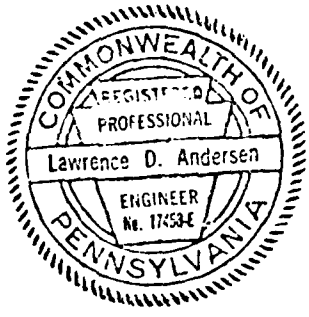
ASSESSMENT

Based on the evaluation of the existing conditions, the condition of the Pelto Dam is considered to be good. The examination of documents and visual observations did not reveal conditions which constitute a hazard to human life or property.

The spillway capacity was evaluated according to the recommended procedure and was found to pass the required spillway design flood of 100 percent of the Probable Maximum Flood (PMF). Therefore, the spillway capacity is rated as adequate.

The following recommendation should be implemented within three months from issuance of this report:

1. An emergency action plan should be developed including a formal warning system to alert the downstream residents in the event of an emergency.



Lawrence D. Andersen, P.E.
Vice President
D'Appolonia Consulting Engineers, Inc.
Pittsburgh, Pennsylvania

Approved by: _____
Col. W. M. Smith, Jr.
New York District Engineer

Date: 14 Aug 81

PELTO DAM
N.Y. 680
DEC I.D. 67-2068
MARCH 25, 1981

Downstream Face

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
PELTO DAM
N.Y. 680
DEC I.D. NO. 67-2068
SUSQUEHANNA RIVER BASIN
TIOGA COUNTY, NEW YORK

SECTION I: PROJECT INFORMATION

1.1 General

a. Authority

The Phase I Inspection reported herein was authorized by the Department of the Army, New York District, Corps of Engineers, to fulfill the requirements of the National Dam Inspection Act, Public Law 92-367.

b. Purpose of Inspection

The inspection was to evaluate the existing conditions of the subject dam to identify deficiencies and hazardous conditions, determine if they constitute hazards to life and property, and recommend remedial measures where necessary.

1.2 DESCRIPTION OF PROJECT

a. Dam and Appurtenances

The Pelto Dam consists of an earth embankment approximately 350 feet long with a maximum height of about 39 feet from the downstream stream bed. The embankment has a crest width of 15 feet and an upstream slope of 3 horizontal to 1 vertical. The downstream slope is 2 horizontal to 1 vertical. A 10-foot-wide berm was provided on the upstream slope at the level of the primary spillway crest.

The spillway facilities for the dam consist of a vegetated earth emergency channel located on the left abutment and a drop inlet pipe primary spillway located at the center of the dam. The primary spillway structures are comprised of a concrete drop inlet structure which discharges into a 24-inch corrugated metal pipe terminating at a plunge pool at the downstream toe. The drop inlet structure is equipped with a trash rack. The outlet pipe is encased in concrete and has been provided with antiseep collars. The emergency spillway is a trapezoidal earth channel with a base width of 45 feet and side slopes of 3 horizontal to 1 vertical.

The primary spillway intake level is located near the upstream toe level of the dam; therefore, the primary spillway also functions as a reservoir drainpipe.

b. Location

The dam is located on Burheight Creek, a tributary of Dean Creek approximately three miles northeast of Van Etten in Tioga County, New York. Plate 1 illustrates the location of the dam.

c. Size Classification

The dam is classified as a small dam based on 39-foot height and maximum storage capacity of 60 acre-feet.

d. Hazard Classification

The dam is classified to be in the high hazard category. A farm located about 0.5 mile downstream from the dam and three houses located about 1.5 miles downstream from the dam are considered to be within the potential floodplain of the Burheight Creek.

It is estimated that failure of the dam under maximum pool level would cause loss of more than a few lives and appreciable property damage in this area.

e. Ownership

The dam is owned by Mrs. Karen Carlson, R.D. #2, Spencer, NY 14883, (607) 589-6747, and operated and maintained by Tioga County Soil and Water Conservation District.

f. Purpose of Dam

The dam is a floodwater retarding structure.

g. Design and Construction History

The dam was designed by the U.S. Department of Agriculture, Soil Conservation Service (SCS) in 1954. Construction of the dam was completed in 1955.

h. Normal Operating Procedures

The reservoir is normally maintained at the crest level of the uncontrolled primary spillway at Elevation 1360 (USGS Datum). The emergency spillway crest is located at Elevation 1377.8.

1.3 PERTINENT DATA

Elevations referred to in this section and subsequent sections of the report were calculated based on approximate field measurements assuming the primary spillway crest level be at Elevation 1360 (USGS Datum) which was interpolated from the USGS 7.5-minute Van Etten quadrange as normal pool level. Elevations shown in the design drawing appear to be relative to an arbitrary site datum.

a. Drainage Area (acres) 270[1]

[1] Planimetered from USGS topographic map. State files indicate the drainage area to be 195 acres.

b. Discharge at Dam (cfs)	
Principal spillway at top of dam	64
Auxiliary spillway at top of dam	1964
Total spillway capacity at top of dam	2030
c. Elevation (USGS Datum) (feet)	
Top of dam	1383.0
Auxiliary spillway crest	1377.8
Principal spillway crest	1360.0
d. Reservoir (acres)	
Surface area at top of dam	4.8
Surface area at crest of auxiliary spillway	3.3
Surface area at crest of principal spillway	1.0
e. Storage Capacity (acre-feet)	
Top of dam	60
Auxiliary spillway crest	40
Principal spillway crest	4
f. Dam	
Type	Earth embankment
Length	350 feet
Height	39 feet
Top width	15 feet
Side slopes	Downstream: 2H:1V Upstream: 3H:1V
Zoning	No
Impervious core	No
Cutoff	No
Grout curtain	No
g. Primary Spillway	
Type	3-foot-square drop inlet
Length	9-foot perimeter
Crest elevation	1360
h. Emergency Spillway	
Type	Vegetated trapezoidal earth channel
Length	45 feet
Crest elevation	1377.8
i. Reservoir Drain	
Type	6-inch steel pipe
Length	130± feet
Access	Inaccessible
Regulating facilities	None (plugged with concrete as required by design)

SECTION 2: ENGINEERING DATA

2.1 DATA AVAILABLE

Available information was obtained from New York State Department of Environmental Conservation, Dam Safety Division files, and from the files of the SCS in Syracuse, New York. Available information includes design and as-built drawings, limited engineering reports, and dam inspection reports by the SCS.

2.2 GEOLOGY

The Pelto Dam is located in the glaciated Allegheny Plateau section of the Appalachian Plateau Province. A regional geology map is included in Appendix F. This section is characterized as a maturely dissected plateau with the features modified by continental glaciation, including deposition of glacial till in the valleys.

The dam site is north of a northeast trending anticline (approximately north 70 degrees east). The folding is gentle with the maximum dip of the limbs being one to two degrees. The dip of the strata are affected locally by the folding; however, regionally, the rock strata dip south to southwest at approximately 100 to 150 feet per mile. Regional discontinuities trend approximately north-south and east-west.

The rock strata in the area consist of unconsolidated Pleistocene glacial till (Wisconsin Drift) underlain by strata of the Lower West Falls Group (Upper Devonian Age). The glacial till consists of a mixture of clay and silt with varying quantities of gravel. The glacial till is relatively thin on hilltops and slopes and thicker in the valleys. The bedrock consists of a thick sequence of interbedded very dark gray to black shale and siltstone which may be up to 2,000 feet thick. The upper portion of the hills west of the dam consists of interbedded very dark gray shales and thin gray siltstone.

The abutment slopes are relatively gentle and not susceptible to landslide slope movement.

2.3 SUBSURFACE INVESTIGATION

A review of available information indicates the surface investigation for the dam consisted of shallow test pits. Test pit logs indicate that the soils in this area generally consist of silty clays.

2.4 EMBANKMENT AND APPURTENANT STRUCTURES

Plates 2 through 7 show the plan and details of the dam and appurtenant structures. To the extent that can be determined, the dam

appears to be a homogeneous embankment. No references were found to indicate whether the embankment incorporated an impervious core, a cutoff trench, or an internal drainage system. As shown in Plate 3, the dam was designed to have a 2 horizontal to 1 vertical slope on the downstream face, and a 3 horizontal to 1 vertical slope on the upstream face with a crest width of 15 feet. A berm was provided on the downstream slope in the vicinity of the primary spillway crest level. Plates 3 and 4 show the details of the primary spillway. The primary spillway structures are comprised of a concrete drop inlet structure discharging into a 24-inch corrugated metal pipe encased in concrete terminating at a plunge pool at the downstream toe. The outlet pipe is equipped with the antiseep collars.

Available hydrology and hydraulic data consist of the information included in Plate 5. Profile of the emergency and design maximum pool stage is shown in Plate 6. Plate 7 includes valley cross sections at various stations in the reservoir area.

2.5 CONSTRUCTION RECORDS

No construction records are available. Based on visual observation, it appears that no major postconstruction changes were instituted.

2.6 OPERATING RECORDS

Because the dam is an ungaged flood-retarding structure, no operating records are maintained for the dam.

2.7 EVALUATION OF DATA

The information obtained from the state and SCS files is considered to be adequate for Phase I inspection purposes.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual inspections of the dam were conducted on March 25 and April 30, 1981. On both dates, the pool level was approximately at the invert level of the primary spillway riser.

b. Embankment

In general, the condition of the dam is considered to be good. No signs of distress, seepage, or misalignment were observed. The faces of the dam and the crest are covered with grass and found to be adequately maintained. Some patches of tall grass and small animal holes were observed on the downstream face. The top of the dam was surveyed relative to the emergency spillway crest elevation and found to be in the range of 0.5 to 2.5 feet above the design level.

c. Primary Spillway

The primary spillway facilities consist of a concrete drop inlet structure discharging into a 24-inch corrugated metal pipe encased in concrete and terminating at a riprapped plunge pool at the downstream toe. Components of the primary spillway were found to be in satisfactory condition.

d. Emergency Spillway

The emergency spillway is a trapezoidal vegetated earth channel located on the left abutment. The emergency spillway channel was found to be in good condition. The grass cover is well established and adequately maintained. The approach and discharge channels were found to be free of brush and trees or debris which may pose a potential for blockage of the spillway.

e. Reservoir Drain

The primary spillway intake is located near the upstream toe of the dam and can drain approximately 90 percent of the 40 acre-feet storage at the emergency spillway crest level. The remaining four acre-feet of storage below the primary spillway crest cannot be drained. The design drawing included in Plate 3 indicates that the reservoir drainpipe which extends from the upstream toe of the dam to the primary spillway drop inlet structure was to be plugged by concrete in the completion of the dam.

f. Downstream Channel

The downstream channel below the primary spillway plunge pool is the natural stream bed. The channel appears to be stable in the near vicinity of the dam.

g. Reservoir

There are no visible signs of instability or sedimentation problems within the reservoir area.

3.2 EVALUATION

The dam was found to be in good condition. At this time, no conditions were observed that would require remedial action.

SECTION 4: OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

The reservoir is normally maintained at the primary spillway crest level with excess inflow discharging through the primary spillway. The dam is a flood-retarding structure and has no formal operating procedure.

4.2 MAINTENANCE OF THE DAM

The dam is maintained by Tioga County Soil and Water Conservation District and the maintenance condition of the dam is considered to be satisfactory.

4.3 WARNING SYSTEM IN EFFECT

No formal warning system exists for the dam.

4.4 EVALUATION

The maintenance condition of the dam is considered to be good. Development of a formal warning system is considered to be advisable.

SECTION 5: HYDRAULIC/HYDROLOGY

5.1 DRAINAGE AREA CHARACTERISTICS

Pelto Dam has a watershed of 0.4 square mile. The drainage area is comprised of woodlands and farmlands. Relief ranges from moderate to steep.

5.2 ANALYSIS CRITERIA

As previously stated, Pelto Dam is classified as a small dam in the high hazard category. Under the recommended criteria for evaluating emergency spillway discharge capacity, such impoundments are required to pass one-half to full PMF. In view of the high downstream damage potential, full PMF was selected as the spillway design flood.

The PMF inflow hydrograph for the reservoir was determined using the Dam Safety Version of the HEC-1 computer program developed by the Hydrologic Engineering Center of the U.S. Army Corps of Engineers. The data used for the computer input are presented in Appendix D. The PMF inflow hydrograph was found to have a peak flow of 1378 cfs. Computer outputs are also included in Appendix D.

5.3 SPILLWAY CAPACITY

The flood discharge facilities for the dam consist of primary and emergency spillways. The emergency spillway is a trapezoidal earth channel on the left abutment with a base width of 45 feet and side slopes of 3 horizontal to 1 vertical. The PMF inflow hydrograph was routed through the reservoir and it was found that the dam can pass 100 percent of the PMF without overtopping the embankment. Based on the available head relative to a low spot on the crest of the dam, the capacities of the primary and emergency spillways are calculated to be 66 cfs and 1964 cfs, respectively. Primary and emergency spillway rating calculations are also included in Appendix D.

5.4 RESERVOIR CAPACITY

The dam impounds a reservoir with a storage capacity of 4.0 acre-feet at the primary spillway crest level, 40 acre-feet at the emergency spillway crest level, and 60 acre-feet at the top of the dam.

5.5 FLOODS OF RECORD

None available.

5.6 OVERTOPPING POTENTIAL

The dam can pass 100 percent of the PMF with the reservoir at Elevation 1382.0, leaving 1.0 foot of freeboard to the low spot on the dam crest.

PMF Ratio	Maximum Outflow (cfs)	Maximum Depth of Overtopping (feet)
100	1357	0

5.7 EVALUATION

The spillway can pass the recommended spillway design flood of full PMF without overtopping the embankment; therefore, spillway capacity is classified to be adequate according to the recommended criteria.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

As discussed in Section 3, the field observations did not reveal any signs of distress that would significantly affect the stability of the dam at this time. However, it should be understood that because the dam is a flood control facility and was at normal pool level at the time of inspection, it was not under maximum loading conditions which would occur only during the passage of major floods.

b. Design and Construction Data

Available information does not include any design and construction data. Further, no reference was found to indicate whether laboratory soils testing, stability, and seepage analysis were conducted for the design of the embankment. Therefore, the structural stability of the dam could not be assessed. However, based on visual observations, static stability of the dam appears to be satisfactory.

c. Post-construction Changes

None reported.

d. Seismic Stability

The dam is located in Seismic Zone 1. Based on the recommended criteria for evaluation of seismic stability of dams, the structure is presumed to present no hazard from earthquakes.

SECTION 7: ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

a. Safety

Visual observations indicate that Pelto Dam is in good condition. No conditions were observed that would significantly affect the overall performance of the structure at this time. However, as previously noted, the dam was not inspected under its maximum loading condition which would occur when the reservoir is filled during major storms.

The spillway capacity was evaluated according to the recommended procedure and was found to pass the required spillway design flood of full PMF without overflowing the embankment; therefore, the spillway capacity is classified to be adequate.

b. Adequacy of Information

Available information, in conjunction with visual observations, is considered to be sufficient to make a Phase I evaluation.

c. Need for Additional Investigations

No additional investigation is considered to be required at this time.

d. Urgency

The following recommendation should be implemented within three months from final issuance of this report.

7.2 RECOMMENDATION

1. An emergency action plan should be developed including a formal warning system to alert the downstream residents in the event of an emergency.

APPENDIX A

PHOTOGRAPHS

PHOTOGRAPH NO. 1
Dam Crest (looking west)

PHOTOGRAPH NO. 2
Upstream Slope (looking west)

PHOTOGRAPH NO. 3
Downstream Slope (background)
Emergency Spillway (foreground)

PHOTOGRAPH NO. 4
Dam Crest (looking east)

PHOTOGRAPH NO. 5
Downstream of Primary Spillway
Discharge Pipe

PHOTOGRAPH NO. 6
Residential Area 1.5 Miles
Downstream From Dam

APPENDIX B

VISUAL INSPECTION CHECKLIST

APPENDIX B
VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam Pelto Dam

Fed. I.D. # N.Y. 680 DEC Dam No. 67-2068

River Basin Susquehanna River Basin

Location: Town Spencer County Tioga

Stream Name Burheight Creek

Tributary of Dean Creek

Latitude (N) 42° 14.0' Longitude (W) 76° 31.7'

Type of Dam Earth

Hazard Category High

Date(s) of Inspection March 25 and April 30, 1981

Weather Conditions Partly Cloudy, Temp 40's

Reservoir Level at Time of Inspection Normal Pool El. 1360.0(1)
(USGS Datum)

b. Inspection Personnel Lawrence Andersen, P.E.; James Poellot, P.E.; Bilgin Erel, P.E.; Wah-Tak Chan, P.E.; and Arthur Smith

c. Persons Contacted (Including Address & Phone No.)

(1) Mrs. Karen Carlson, R.D. #2, Spencer, N.Y. 14883
(607) 589-6747

(2) Mr. Gary Page, SCS, Broome County, N.Y.

(1)Elevation interpolated from USGS 7.5-minute Van Etten, New York quadrangle dated 1969 as normal pool level.

d. History:

Date Constructed 1955 Date(s) Reconstructed N/A

Designer U.S. Department of Agriculture, Soil Conservation Service

Constructed by Unknown

Owner Mrs. Karen Carlson

2) Embankment

a. Characteristics

(1) Embankment Material Earth

(2) Cutoff Type None

(3) Impervious Core None

(4) Internal Drainage System None

(5) Miscellaneous ---

b. Crest

(1) Vertical Alignment Good. Dam crest generally above design level.

(2) Horizontal Alignment Good

(3) Surface Cracks None

(4) Miscellaneous ---

c. Upstream Slope

(1) Slope (Estimate) 3H:1V (as designed); 2.9H:1V (as measured)

(2) Undesirable Growth or Debris, Animal Burrows Minor animal holes

(3) Sloughing, Subsidence or Depressions None

(4) Slope Protection Vegetated Slope

(5) Surface Cracks or Movement at Toe None

d. Downstream Slope

(1) Slope (Estimate) 2H:1V (as designed);
2.1H:1V (as measured)

(2) Undesirable Growth or Debris, Animal Burrows None

(3) Sloughing, Subsidence or Depressions None

(4) Surface Cracks or Movement at Toe None

(5) Seepage None

(6) External Drainage System (Ditches, Trenches, Blanket)
None

(7) Condition Around Outlet Structure Good

(8) Seepage Beyond Toe None

e. Abutments - Embankment Contact

No problems observed.

(1) Erosion at Contact None

(2) Seepage Along Contact None

3) Drainage System

a. Description of System The dam has no internal drainage system.

b. Condition of System N/A

c. Discharge from Drainage System N/A

4) Instrumentation (Monumentation/Surveys, Observation Wells, Weirs, Piezometers, etc.)

None

5) Reservoir

a. Slopes Moderate to steep, no problems observed.

b. Sedimentation Unknown, no noticeable problems.

c. Unusual Conditions Which Affect Dam None

6) Area Downstream of Dam

a. Downstream Hazard (No. of Homes, Highways, etc.) 1 farm and 3 houses below dam at 0.5 and 1.5 miles downstream, respectively.

b. Seepage, Unusual Growth None

c. Evidence of Movement Beyond Toe of Dam None

d. Condition of Downstream Channel Good

7) Spillway(s) (Including Discharge Conveyance Channel)

In good condition.

a. General Service Spillway: 3-foot-square concrete riser and 24-inch outlet pipe.

Auxiliary Spillway: Vegetated earth channel on left abutment.

b. Condition of Service Spillway Good

c. Condition of Auxiliary Spillway Good

d. Condition of Discharge Conveyance Channel Good

8) Reservoir Drain/Outlet (Reservoir has no operable drain facility)

Type: Pipe X Conduit _____ Other _____

Material: Concrete _____ Metal _____ Other Corrugated metal pipe

Size: 6 inches Length Approximately 20 feet

Invert Elevations: Entrance Unknown Exit Unknown

Physical Condition (Describe): Unobservable

Material: --

Joints: -- Alignment --

Structural Integrity: --

Hydraulic Capability: Upstream and plugged with concrete.

Means of Control: Gate _____ Valve _____ Uncontrolled _____

Operation: Operable _____ Inoperable X Other _____

Present Condition (Describe): See note above.

9) Structural

a. Concrete Surfaces The only concrete structure is the principal spillway drop inlet structure. Concrete is in good condition.

b. Structural Cracking None

c. Movement - Horizontal & Vertical Alignment (Settlement)

N/A

d. Junctions with Abutments or Embankments

N/A

e. Drains - Foundation, Joint, Face

N/A

f. Water Passages, Conduits, Sluices

N/A

g. Seepage or Leakage

N/A

h. Joints - Construction, etc. N/A

i. Foundation N/A

j. Abutments N/A

k. Control Gates N/A

l. Approach & Outlet Channels N/A

m. Energy Dissipators (Plunge Pool, etc.) Good condition.

n. Intake Structures Good

o. Stability N/A

p. Miscellaneous ---

10) Appurtenant Structures (Power House, Lock, Gatehouse, Other)

a. Description and Condition None

APPENDIX C

ENGINEERING DATA CHECKLIST

APPENDIX C
ENGINEERING DATA CHECKLIST
NAME OF DAM: PELTO

AREA-CAPACITY DATA:

	Elevation (feet)	Surface Area (acres)	Storage Capacity (acre-feet)
1) Top of Dam	1383.0(1)	4.8	60.0
2) Design High Water(2) (Max. Design Pool)	1381.7	4.5	55.0
3) Auxiliary Spillway Crest	1377.8	3.3	40.0
4) Pool Level with Flashboards			
5) Service Spillway Crest	1360.0	1.0	4.0

(1)Measured low spot.
(2)Maximum pool level during full PMF.

DISCHARGES

	Discharge (cfs)
1) Average Daily	1 ±
2) Auxiliary Spillway at Maximum High Water (Top of Dam)	1964
3) Auxiliary Spillway at Design High Water	1238
4) Principal Spillway at Auxiliary Spillway Crest Elevation	66
5) Low Level Outlet	Not functional
6) Total of All Facilities at Maximum High Water	2030
7) Maximum Known Flood	Unknown
8) At Time of Inspection	Approx. 1 ±

DAM: Pelto Dam

CREST ELEVATION: 1383.0 (measured low spot)

Type: Earth

Width: 15 feet Length: 350 feet

Spillover: Concrete drop inlet and vegetated earth channel

Location: Drop inlet: Center of dam; Earth channel: Left abutment

SPILLWAY:

SERVICE		AUXILIARY
1360.0	Elevation	1377.8
Concrete Drop Inlet	Type	Vegetated Earth Channel
9 feet	Width	45 feet
	Type of Control	
Uncontrolled	Uncontrolled	Uncontrolled
	Controlled	
N/A	Type (Flashboards; gate)	N/A
N/A	Number	N/A
N/A	Size/Length	45 feet long
	Invert Material	Vegetated Earth
	Anticipated Length of Operating Service	Unknown
160	Chute Length	N/A
1 ± foot	Height Between Spillway Crest and Approach Channel Invert (Weir Flow)	4 ± feet

Hydrometerological Gages:

Type: None

Location: N/A

Records:

Date - N/A

Max. Reading - N/A

FLOODWATER CONTROL SYSTEM:

Warning System: None

Method of Controlled Releases (Mechanisms):

None

DRAINAGE AREA: 0.4 square mile

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: Wood and farmland

Terrain - Relief: Moderate

Surface - Soil: Low permeability soil

Runoff Potential (existing or planned extensive alterations to existing surface or subsurface conditions)

High runoff potential due to moderate slope and low infiltration rate.

Potential Sedimentation problem areas (natural or man-made; present or future)

None observed.

Potential Backwater problem areas for levels at maximum storage capacity including surcharge storage:

None observed.

Dikes - Floodwalls (overflow and nonoverflow) - Low reaches along the reservoir perimeter:

Location: None

Elevation:

Reservoir:

Length at Maximum Pool: 800 ± feet

Length of Shoreline at Spillway Crest: 2,100 ± feet

APPENDIX D

HYDROLOGY AND HYDRAULIC ANALYSES

HYDROLOGY AND HYDRAULIC ANALYSIS
DATA BASE

NAME OF DAM: Pelto Dam (NY DEC 67-2068)

PROBABLE MAXIMUM PRECIPITATION (PMP) = 22.2 INCHES/24 HOURS[1]

STATION	1	2	3	4	5
Station Description	Pelto Lake	Pelto Dam			
Drainage Area (square miles)	0.42[2]	-			
Cumulative Drainage Area (square miles)	0.42	0.42			
Adjustment of PMF for Drainage Area (%)	95%[3]				
6 Hours	117[1]	-			
12 Hours	127	-			
24 Hours	136	-			
48 Hours	142	-			
72 Hours	145	-			
Snyder Hydrograph Parameters					
C_p/C_t[4]	0.62/1.5	-			
L (miles)[5]	0.97	-			
L_{ca} (miles)[5]	0.44	-			
$t_p = C_t(L \cdot L_{ca})^{0.3}$ (hours)	1.16	-			
Spillway Data					
Crest Length (ft)	-	See spillway capacity rating calculations			
Freeboard (ft)	-				
Discharge Coefficient	-				
Exponent	-				

(1) Hydrometeorological Report 33 (Figure 1), U.S. Army, Corps of Engineers, 1956.
(2) Planimetered from USGS topography map. State files indicate a watershed of 0.30 square miles.
(3) Hydrometeorological Report 40, U.S. Weather Bureau, 1965.
(4) Snyder's Coefficients (C_p and C_t) as recommended by Corps of Engineers, Baltimore District for Susquehanna River Basin.
(5) L = Length of longest water course from outlet to basin divide.
L_{ca} = Length of water course from outlet to point opposite the centroid of drainage area.

STORAGE VS. ELEVATION

ELEVATION	ΔH, FEET	AREA (acres)[1]	ΔVOLUME (acre-feet)[2]	STORAGE (acre-feet)
1348.4		0.0		0
	11.6		3.9	
1360.0		1.0		3.9
	20.0		44.2	
1380.0		3.7		48.0
	20.0		102.5	
1400.0		6.7		150.5
	10.0		116.3	
1410.0		17.4		266.9

(1) Planimetered from USGS maps.
(2) $\Delta Volume = \Delta H/3\ (A_1 + A_2 + \sqrt{A_1 A_2})$.

```
**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
  LAST MODIFICATION  01 APR 80
**********
    1              A1       SNYDER UNIT HYDROGRAPH, SPILLWAY AND DAM OVERTOPPING ANALYSES
    2              A2       PELTO DAM,(NY 67-2068),TIOGA COUNTY,N.Y. PROJECT NO. 80-778-02
    3              A3       FOR 20%,30%,40%,50%,60%,70%,80%,90%,AND 100% PROBABLE MAXIMUM FLOOD(PMF)
    4              B    300         0      15       0       0       0       0       0      -4       0
    5              B1     5
    6              J      1         9       1
    7              J1  0.20     0.30    0.40    0.50    0.60    0.70    0.80    0.90    1.00
    8              K      0         1                                       1
    9              K1       CALCULATION OF SNYDER INFLOW HYDROGRAPH TO PELTO DAM, (N.Y. 67-2068)
   10              M      1         1    0.42               0.42                                1
   11              P               21.1     117     127     136     142     145
   12              T                                                       1.0    0.05           0.0034
   13              W    1.16     0.62
   14              X    -1.5    -0.05     2.0
   15              K      1         2                                       1
   16              K1       ROUTING FLOW THROUGH PELTO DAM, (N.Y. 67-2068)
   17              Y                                       1       1
   18              Y1     1                                                -1360.0      -1
   19              Y41360.0  1361.2  1366.0  1372.0  1377.8  1378.5  1379.0  1379.5  1380.0  1380.5
   20              Y41381.0  1381.5  1382.0  1382.5  1383.0  1383.5  1384.0  1384.5  1385.0
   21              Y5   0.0    45.0    52.0    59.0    65.5   140.7   238.7   365.3   518.3   696.7
   22              Y5 900.2  1128.6  1381.9  1660.4  1964.1  2293.5  2648.9  3030.5  3438.8
   23              $A   0.0     1.0     3.7     6.7    17.4
   24              $E1348.4  1360.0  1380.0  1400.0  1410.0
   25              $S1377.8
   26              $D1383.0    2.65     1.5   350.0
   27              $L   50.0   100.0   150.0   250.0   300.0   350.0
   28              $V1383.0  1383.4  1383.7  1383.9  1384.1  1385.5
   29              K     99
```

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS RATIO 1 .20	RATIO 2 .30	RATIO 3 .40	RATIO 4 .50	RATIO 5 .60	RATIO 6 .70	RATIO 7 .80	RATIO 8 .90	RATIO 9 1.00
HYDROGRAPH AT	1	.42 (1.09)	1	276. (7.80)	413. (11.71)	551. (15.61)	689. (19.51)	827. (23.41)	965. (27.31)	1102. (31.22)	1240. (35.12)	1378. (39.02)
ROUTED TO	2	.42 (1.09)	1	182. (5.16)	390. (11.04)	542. (15.34)	677. (19.17)	813. (23.01)	948. (26.85)	1084. (30.68)	1222. (34.59)	1357. (38.43)

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1360.00	1377.80	1383.00
STORAGE	4.	40.	60.
OUTFLOW	0.	66.	1964.

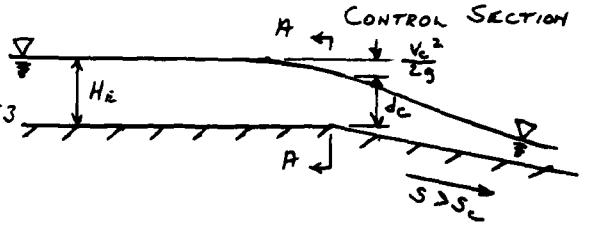
RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
.20	1378.71	0.00	43.	182.	0.00	42.00	0.00
.30	1379.58	0.00	46.	390.	0.00	41.00	0.00
.40	1380.07	0.00	48.	542.	0.00	41.00	0.00
.50	1380.44	0.00	50.	677.	0.00	41.00	0.00
.60	1380.79	0.00	51.	813.	0.00	41.00	0.00
.70	1381.11	0.00	52.	948.	0.00	41.00	0.00
.80	1381.40	0.00	53.	1084.	0.00	41.00	0.00
.90	1381.68	0.00	54.	1222.	0.00	40.75	0.00
1.00	1381.95	0.00	55.	1357.	0.00	40.75	0.00

D'APPOLONIA
CONSULTING ENGINEERS, INC.

By MMS Date 5/2/81 Subject PELTO DAM Sheet No. 1 of 1
Chkd. By WTC Date 5/7/81 N.Y. 67-2068 Proj. No. 80-775-02

SPILLWAY CAPACITY

REF. 1: "DESIGN OF SMALL DAMS", 2ND ED., PG. 553

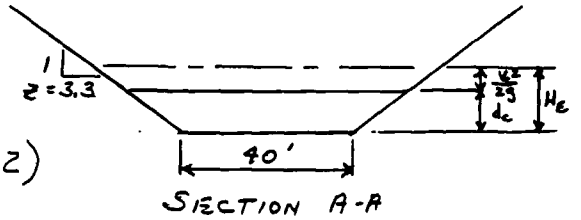


$$V_c = \sqrt{\left(\frac{b + zd_c}{b + 2zd_c}\right) d_c g} \qquad (Eq.\ 1)$$

$$H_E = d_c + \frac{V_c^2}{2g} = d_c + \left(\frac{b+zd_c}{b+2zd_c}\right)(d_c g)\left(\frac{1}{2g}\right)$$

$$= \left(\frac{3b + 5zd_c}{2b + 4zd_c}\right) d_c$$

$$d_c = \frac{-(3b - 4H_E z) + \sqrt{(3b - 9H_E z)^2 + (4H_E z)(10b)}}{10z} \qquad (Eq.\ 2)$$



SECTION A-A

$$A_c = (zd_c + b)d_c \qquad (Eq.\ 3)$$

$$Q_c = A_c V_c \qquad (Eq.\ 4)$$

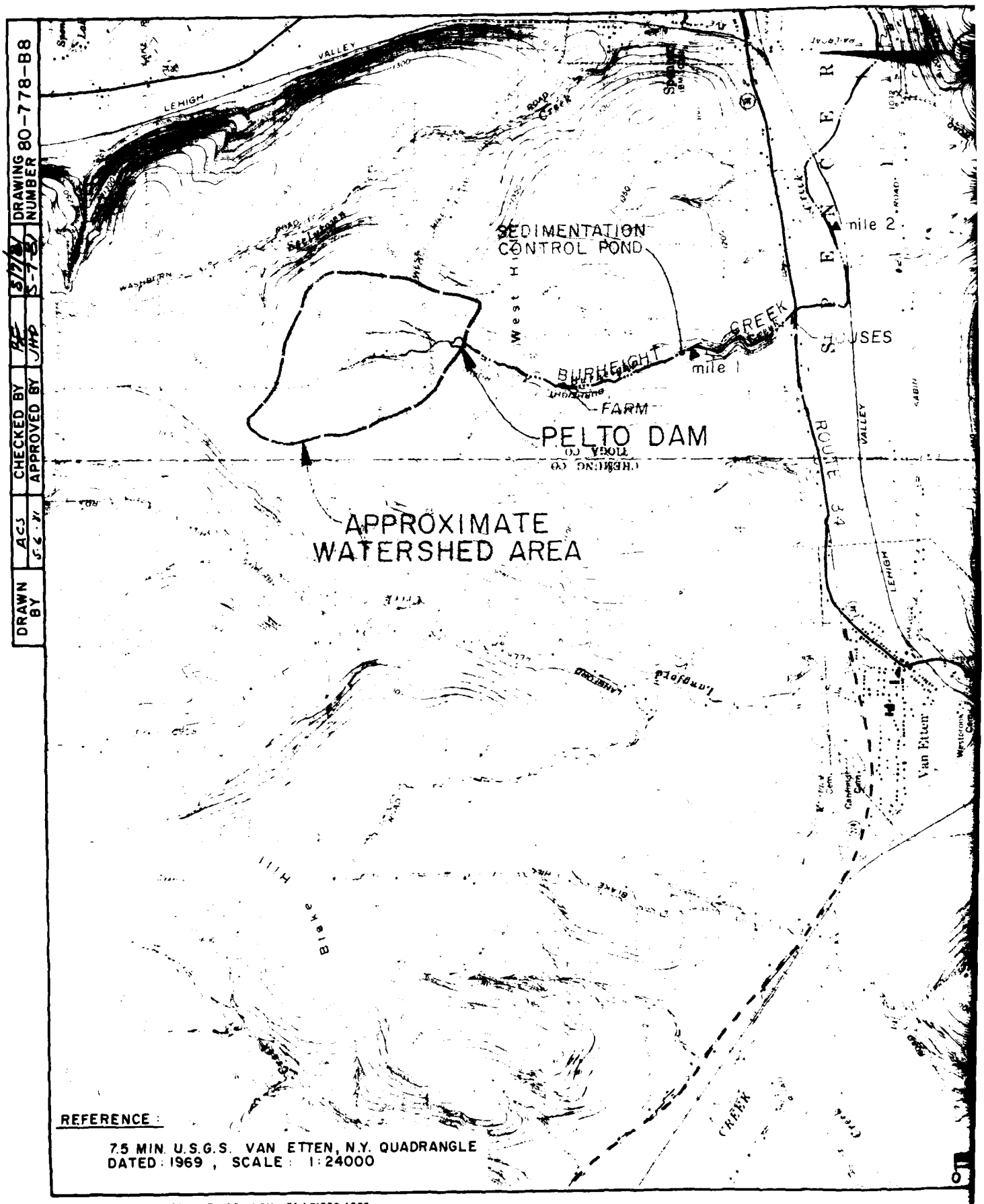
REF. 2 - LOW LEVEL OUTLET: EL 1360.0, Q_L = 0.0 CFS; EL 1361.2, Q_L = 45 CFS; EL 1366.0, Q_L = 52 CFS; EL 1372.0, Q_L = 59 CFS

LAKE ELEVATION (FT.)	H_E (FT.)	Eq. 2 d_c (FT.)	Eq. 3 A_c (FT^2)	Eq. 1 V_c (FPS)	Eq. 4 Q_c, SPILLWAY CAPACITY (CFS)	REF. 2 Q_L (CFS)	$Q_c + Q_L$ Q_T (CFS)
1377.8	0	0	0	0	0	65.5	65.5
1378.5	0.7	0.5	19.6	3.8	75.2	65.5	140.7
1379.0	1.2	0.8	34.8	5.0	173.2	65.5	238.7
1379.5	1.7	1.2	51.1	5.9	299.8	65.5	365.3
1380.0	2.2	1.5	68.3	6.6	452.8	65.5	518.3
1380.5	2.7	1.9	86.5	7.3	631.2	65.5	696.7
1381.0	3.2	2.2	105.8	7.9	834.7	65.5	900.2
1381.5	3.7	2.6	126.1	8.4	1063.1	65.5	1128.6
1382.0	4.2	3.0	147.4	8.9	1316.4	65.5	1381.9
1382.5	4.7	3.3	169.8	9.4	1594.9	65.5	1660.4
TOP OF DAM 1383.0	5.2	3.7	193.2	9.8	1898.6	65.5	1964.1
1383.5	5.7	4.1	217.7	10.2	2228.0	65.5	2293.5
1384.0	6.2	4.4	243.1	10.6	2583.4	65.5	2648.9
1384.5	6.7	4.8	269.7	11.0	2965.0	65.5	3030.5
1385.0	7.2	5.2	297.3	11.3	3373.3	65.5	3438.8

REF. 2: SCS DRAWING "DEAN CREEK, PELTO DAM, FLOOD ROUTING - 100 YEAR STORM", 5/20/54 (PLATE 10).

APPENDIX E

PLATES



18 1253 HERCULENE. A&B SMITH CO., PGH., PA LT1530-1079

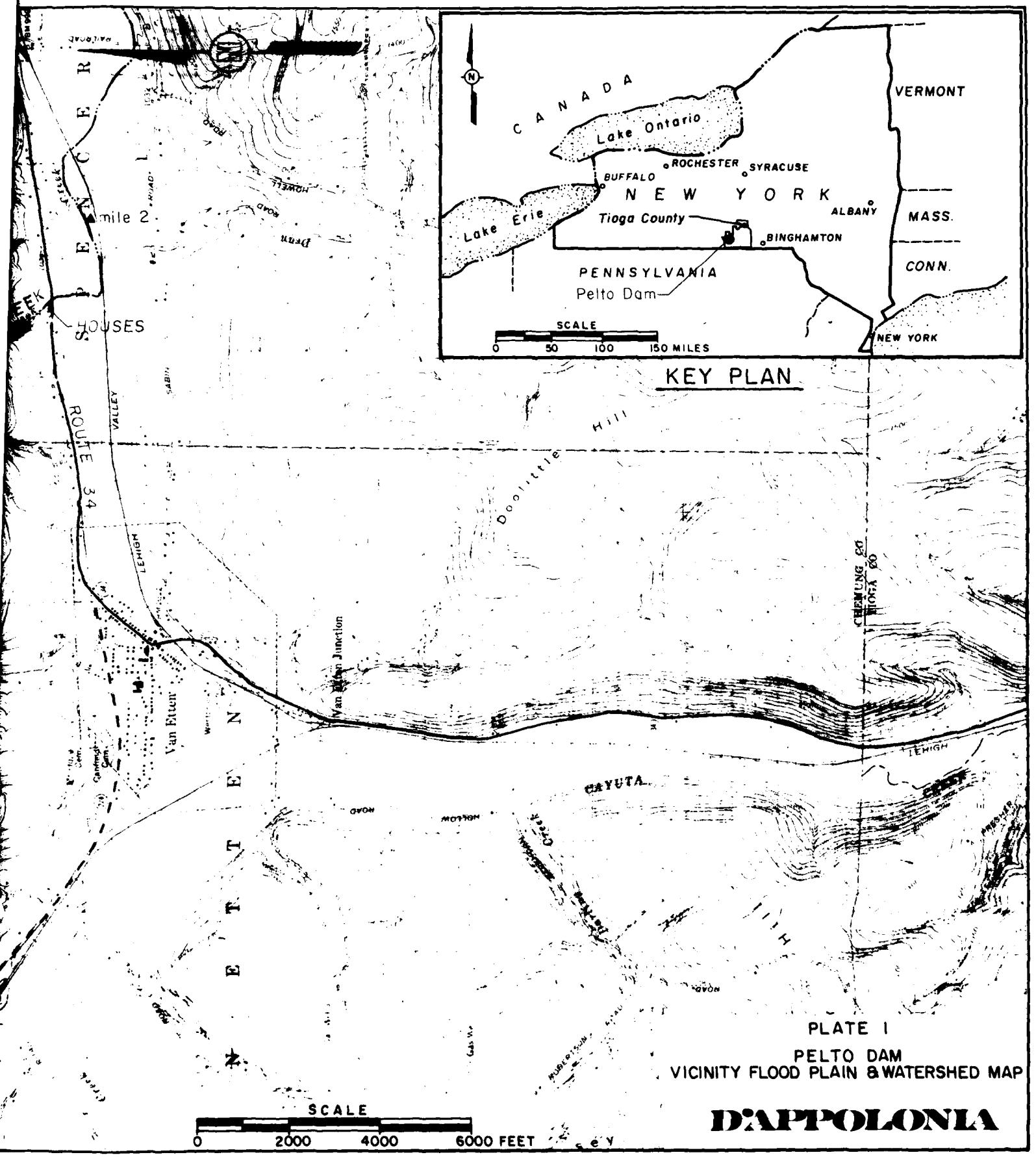


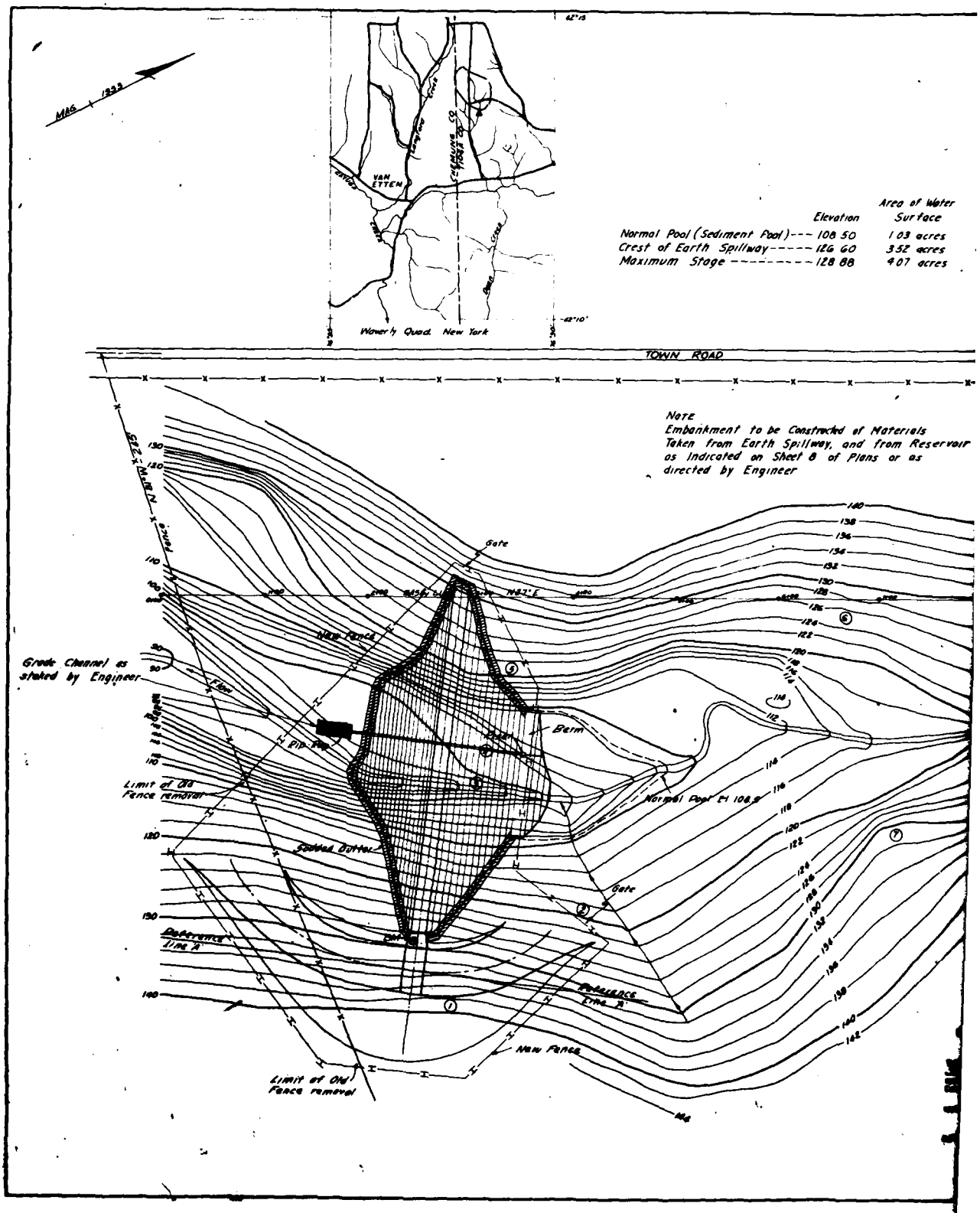
PLATE 1

PELTO DAM
VICINITY FLOOD PLAIN & WATERSHED MAP

D'APPOLONIA

2

DRAWN BY	ACS	CHECKED BY	RJC	5/17/87	DRAWING NUMBER 80-778-89
	C.G.M.	APPROVED BY	JWS	5-7-87	



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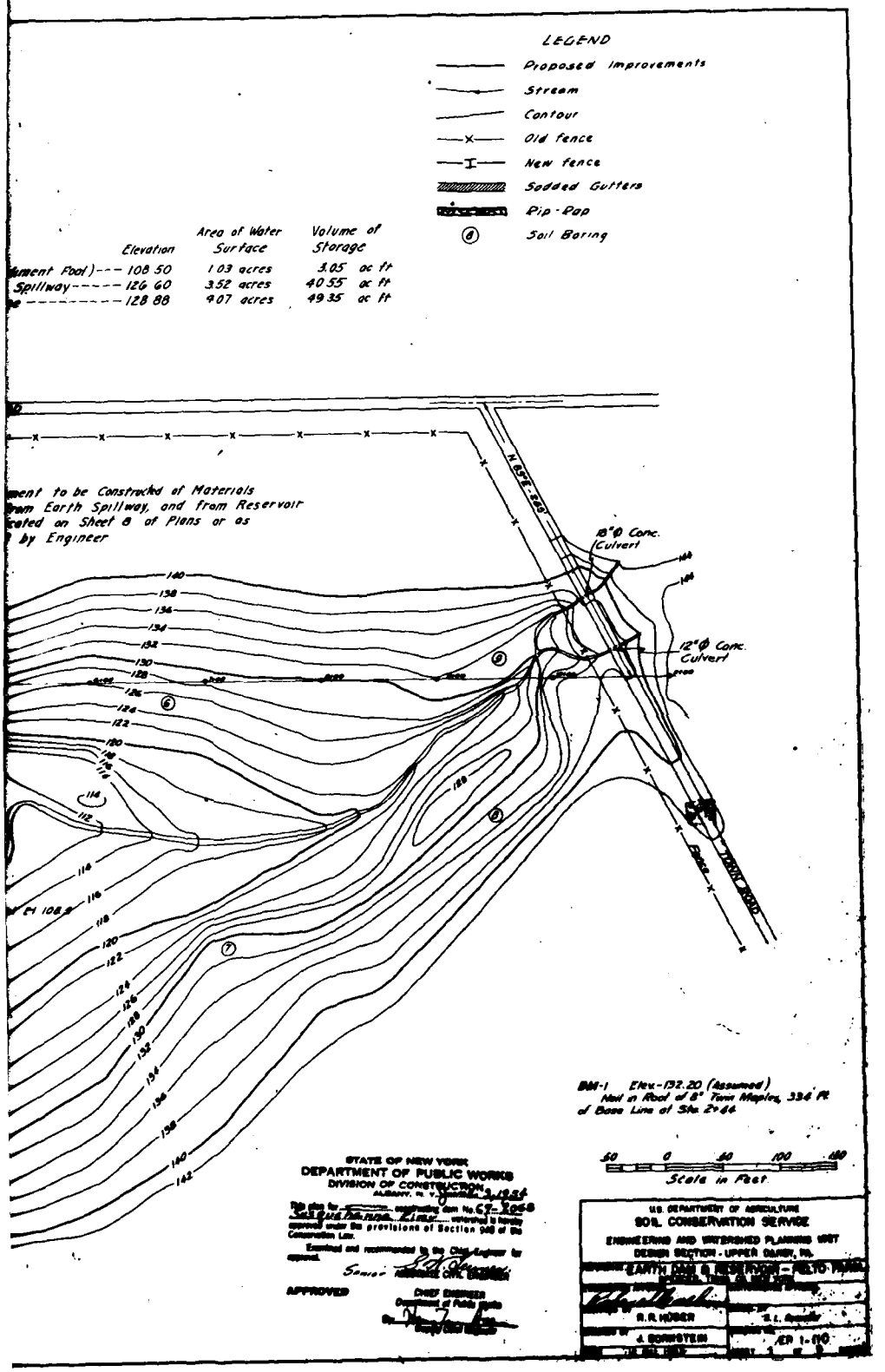

PLATE 2

2

D'APPOLONIA

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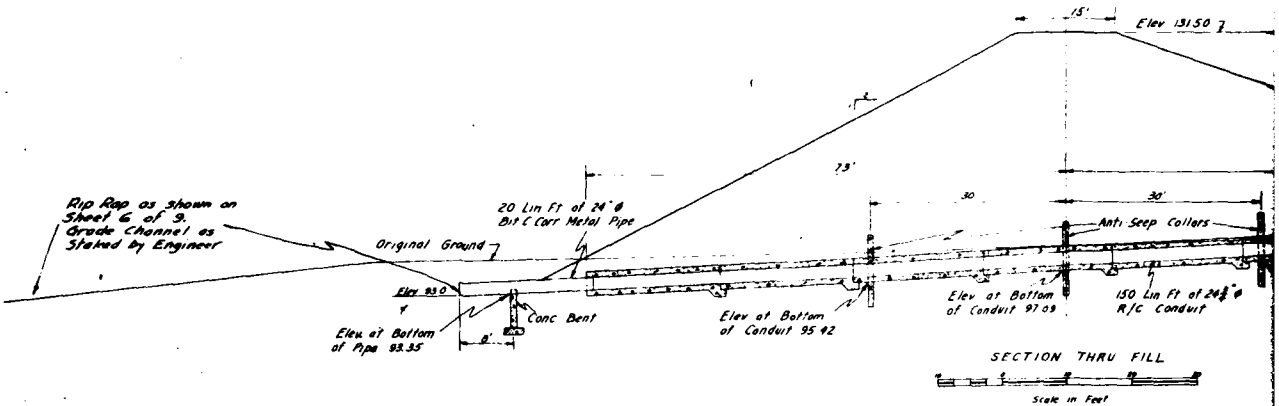
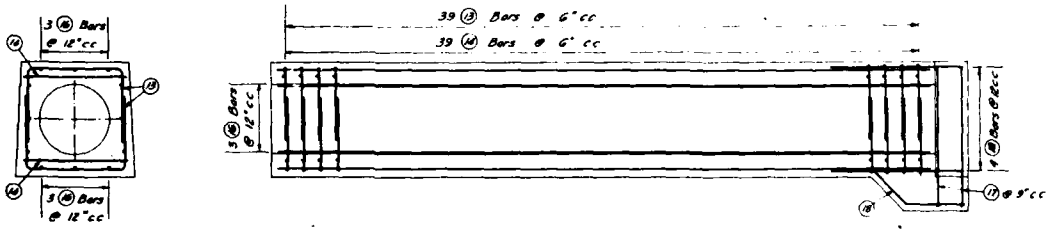
C.G.Y.			

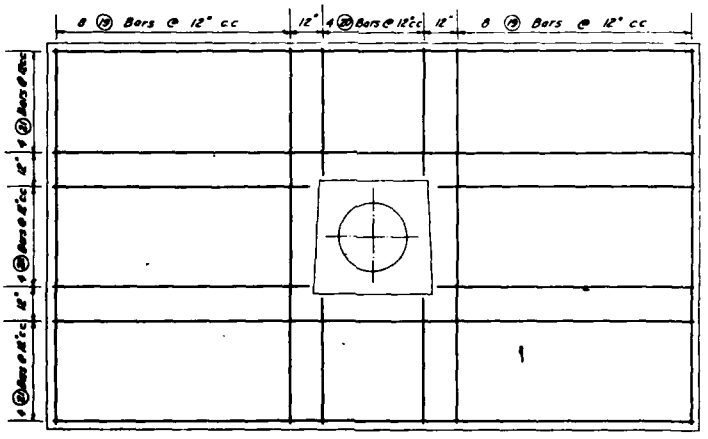


SECTION THRU FILL

Scale in Feet

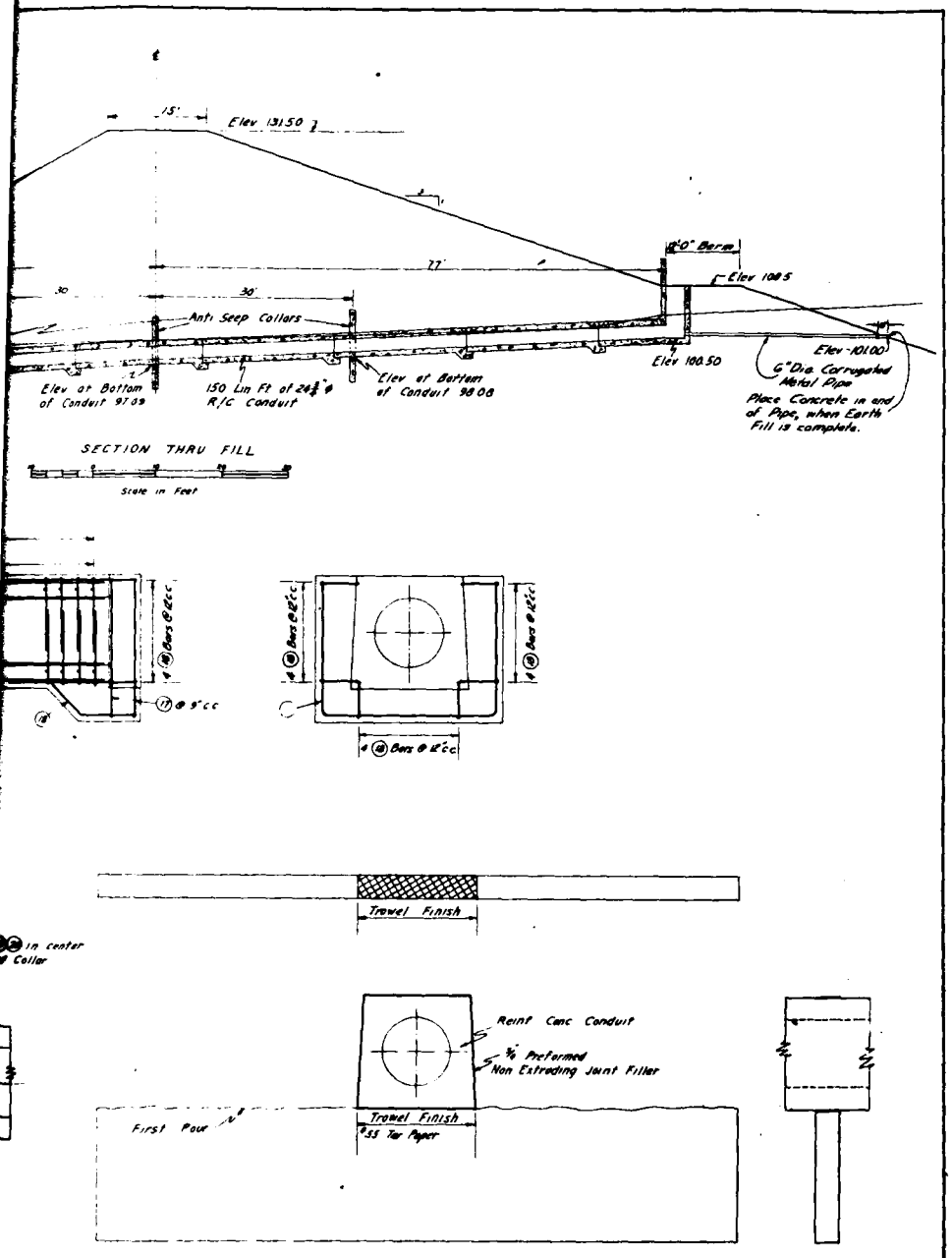


STEEL DETAILS
REINFORCED CONCRETE CONDUIT



STEEL DETAILS
ANTI-SEEP COLLAR

SHOWING



ANTI-SEEP COLLAR
SHOWING FIRST POUR-TROWEL FINISH SECTION

Prepared By
ENGINEERING & WATERSHED
PLANNING UNIT
DESIGN SECTION
UPPER DARBY, PA.

SCALE IN FEET

DEAN CREEK
PELTO DAM
TIOGA CO. NEW YORK
STEEL DETAILS - SECTION THRU FILL
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ASSISTING
TIOGA CO. SCD

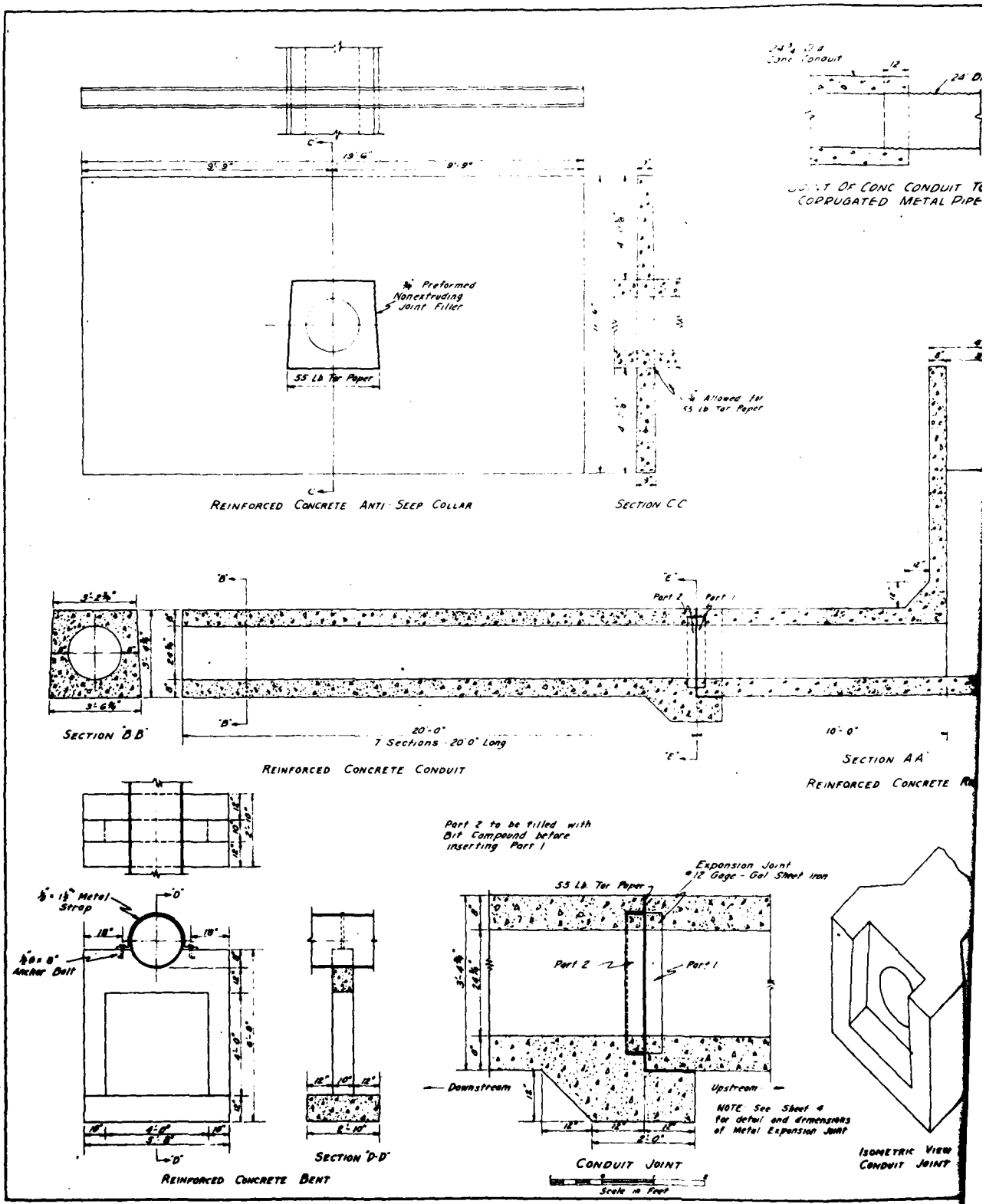
DESIGNED BY R.R. HUBER	DRAWN BY B. HERRERA
CHECKED BY J. BORNSTEIN	SCALE 1-110
DATE 8-22-66	SHEET 3 OF 9 SHEETS

PLATE 3

D'APPOLONIA

2

DRAWING NUMBER	80-778-B11
	5/2/80
	5-7-80
CHECKED BY	
APPROVED BY	
DRAWN BY	ACS
	5-6-80



19 1253 HERCULENE. A&B SMITH CO., PGH., PA LT1330-1079

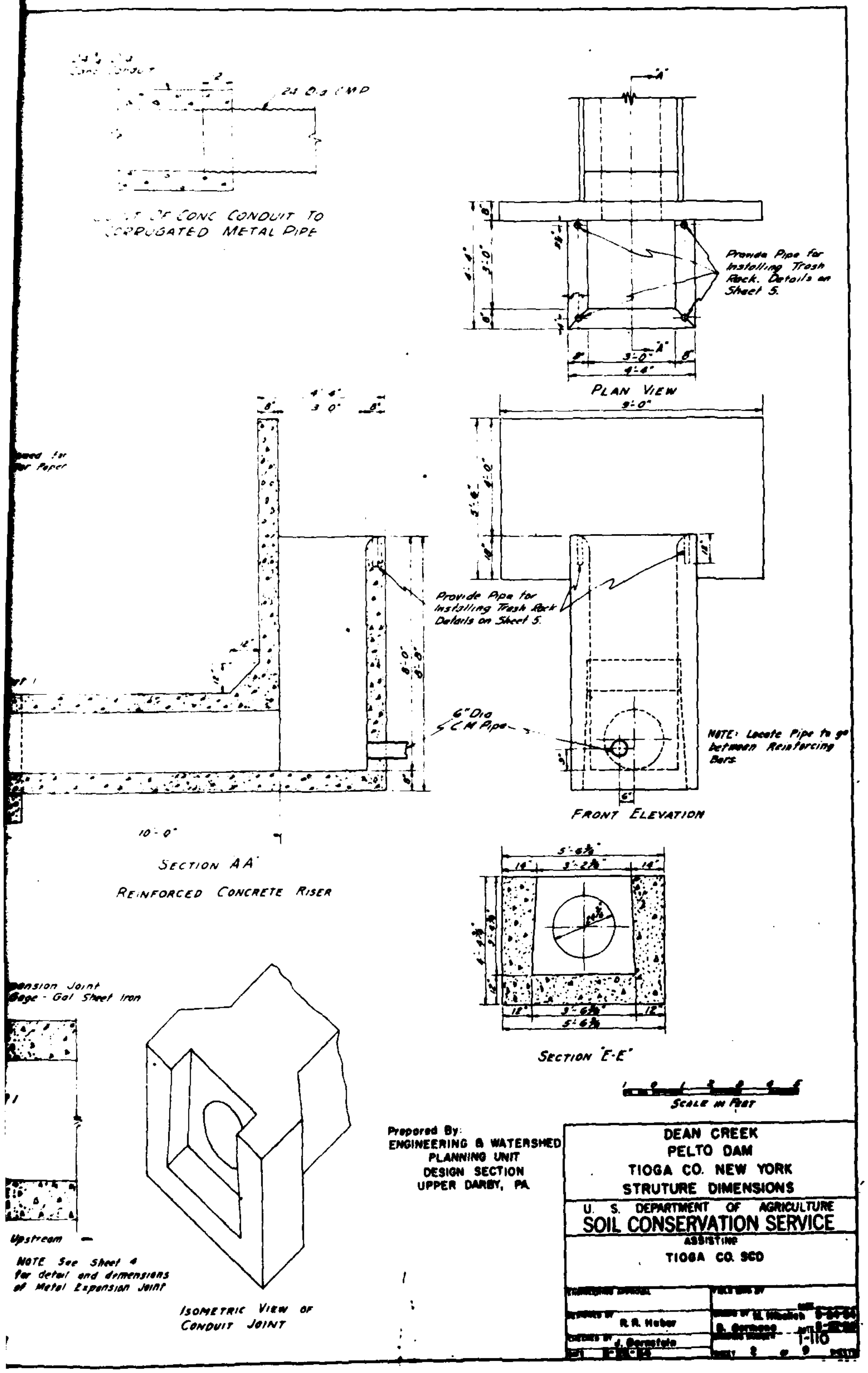


PLATE 4

D'APPOLONIA

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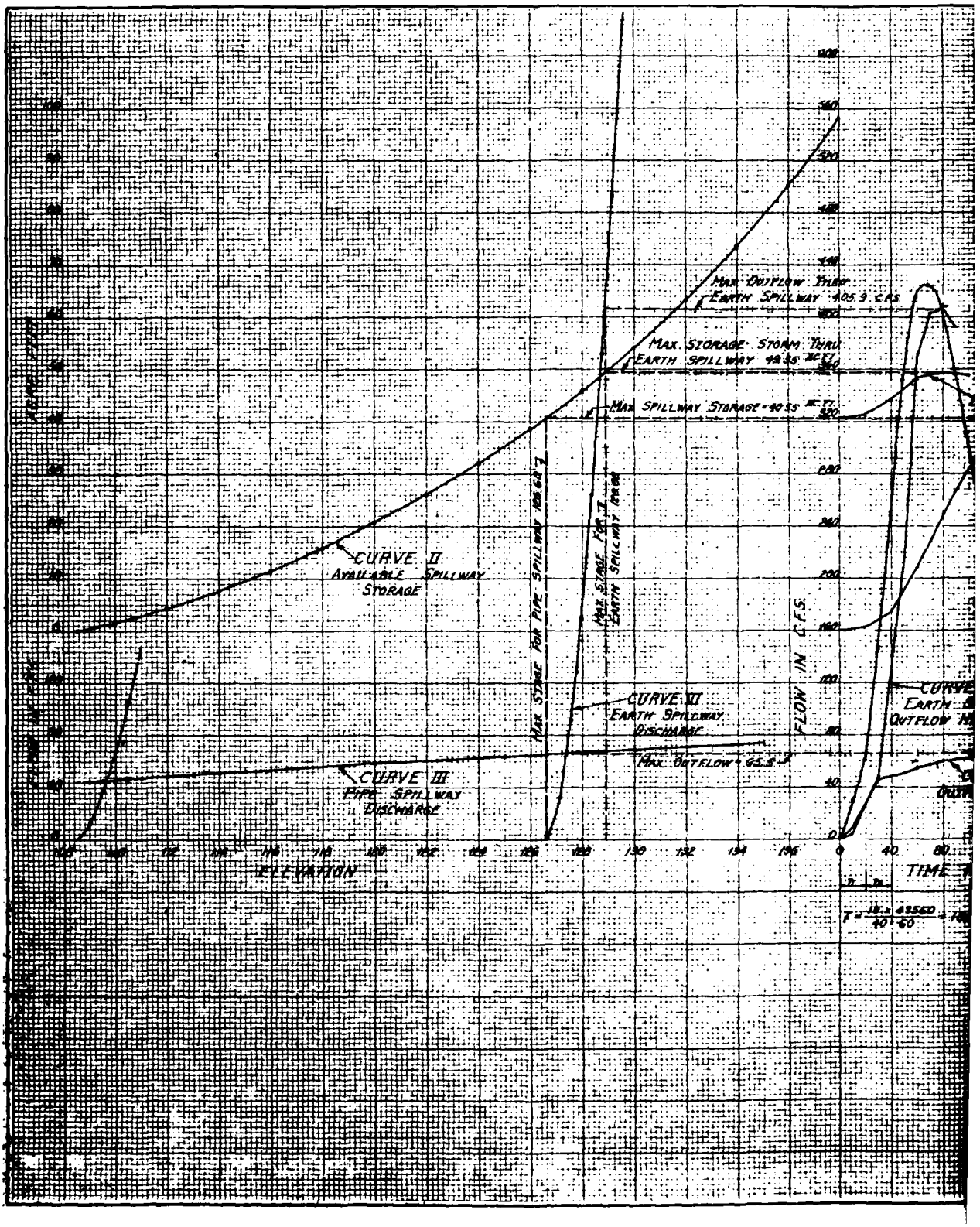
	S.G.Y.	APPROVED BY	JMD	5-7-81	



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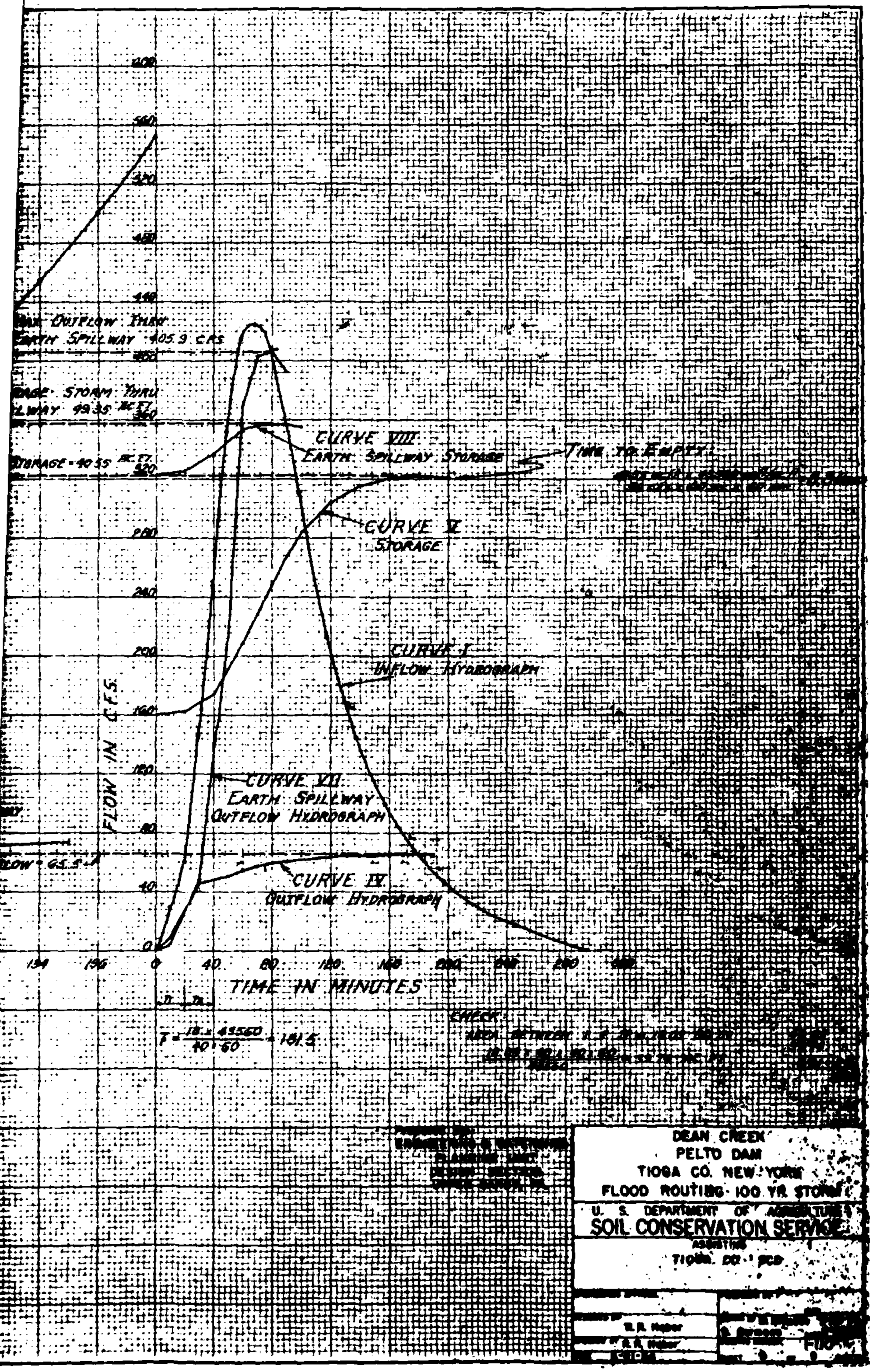

PLATE 5

2

D'APPOLONIA

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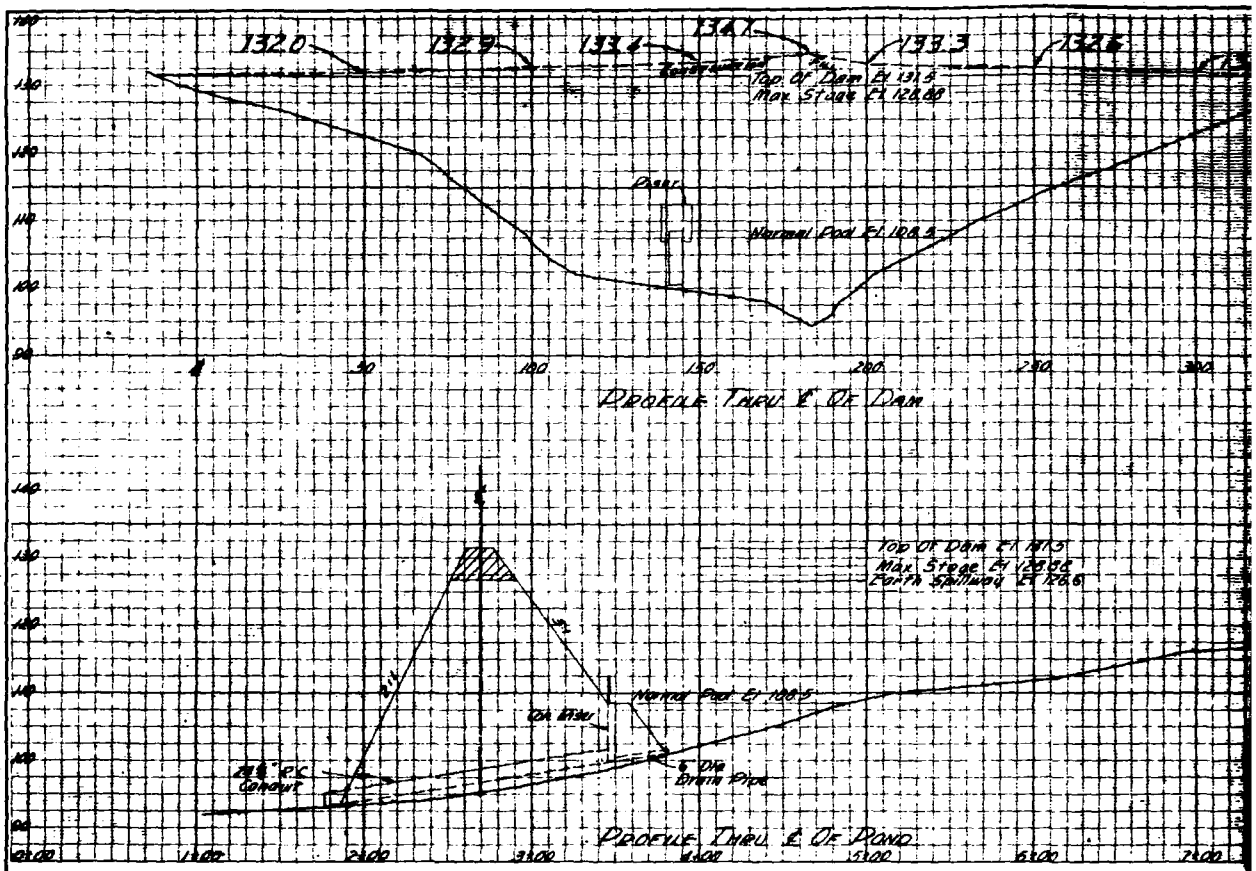
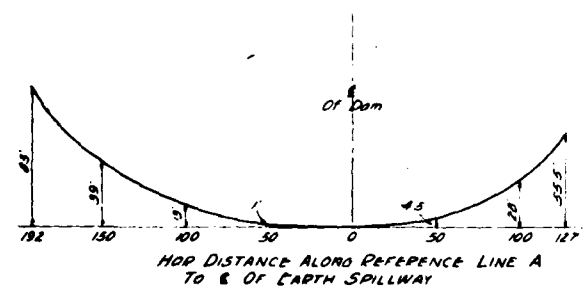
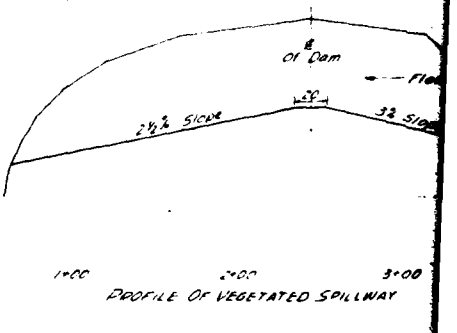
S.G.H.	APPROVED BY	
	[illegible]	

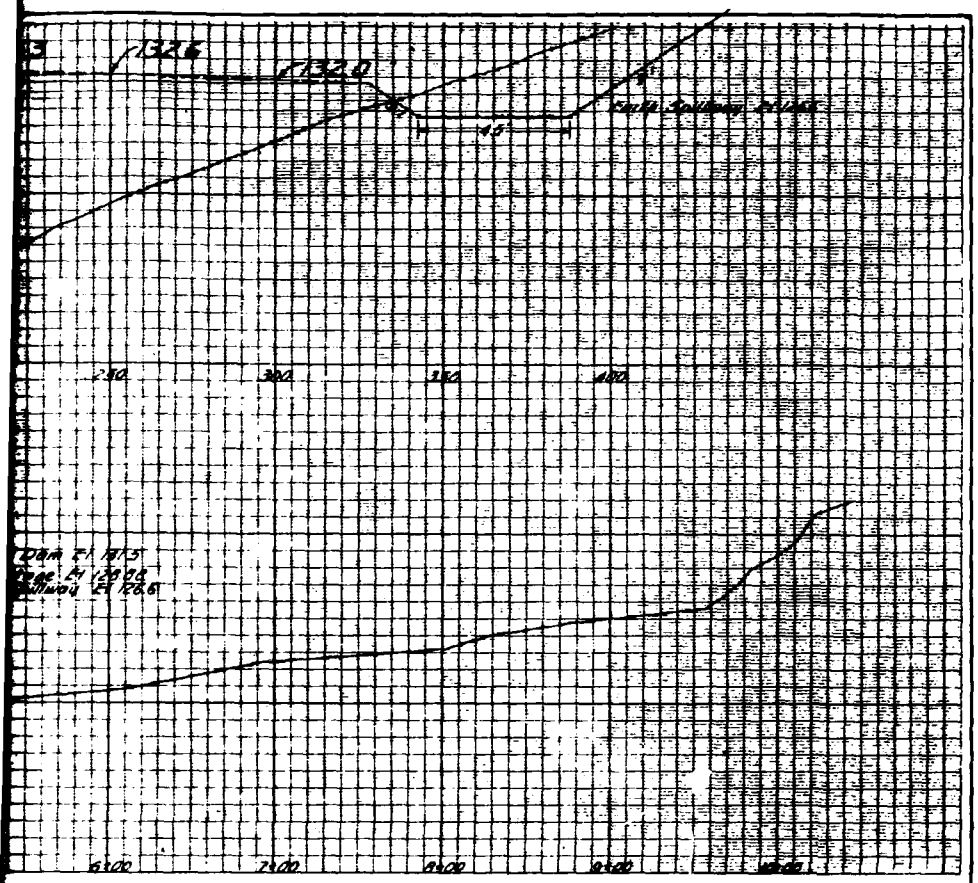


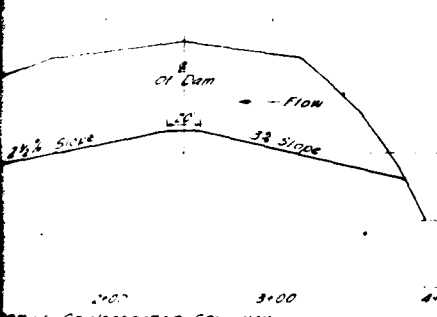


HOR DISTANCE ALONG REFERENCE LINE A TO ℄ OF EARTH SPILLWAY



PROFILE OF VEGETATED SPILLWAY





PROFILE OF VEGETATED SPILLWAY

SOILS DATA

(1)(2)(6) (7)(8)(9) 0'-2" Topsoil
2'-3" Deeply mottled silt
3'-48" Heavy hard pan

(3) 0'-8" Silt deposits
8"-24" Mottled silt & clay
24"-48" Heavy silt & clay

(4) 0'-6" Topsoil
6"-12" Well drained subsoil
12"-48" Mottled silt

(5) 0'-6" Topsoil
6"-14" Well drained subsoil
14"-48" Heavy hardpan

Prepared By
ENGINEERING & WATERSHED
PLANNING UNIT
DESIGN SECTION
UPPER DARBY, PA

DEAN CREEK
PELTO DAM
TIOGA CO. NEW YORK
PROFILES.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ASSISTING
TIOGA CO. SCD

DESIGNED BY R. R. Huber	DRAWN BY J. Rexford 8-28-64
CHECKED BY R. R. Huber	TRACING NUMBER 1-110
DATE 8-28-64	SHEET 7 OF 9 SHEETS

PLATE 6

2

D'APPOLONIA

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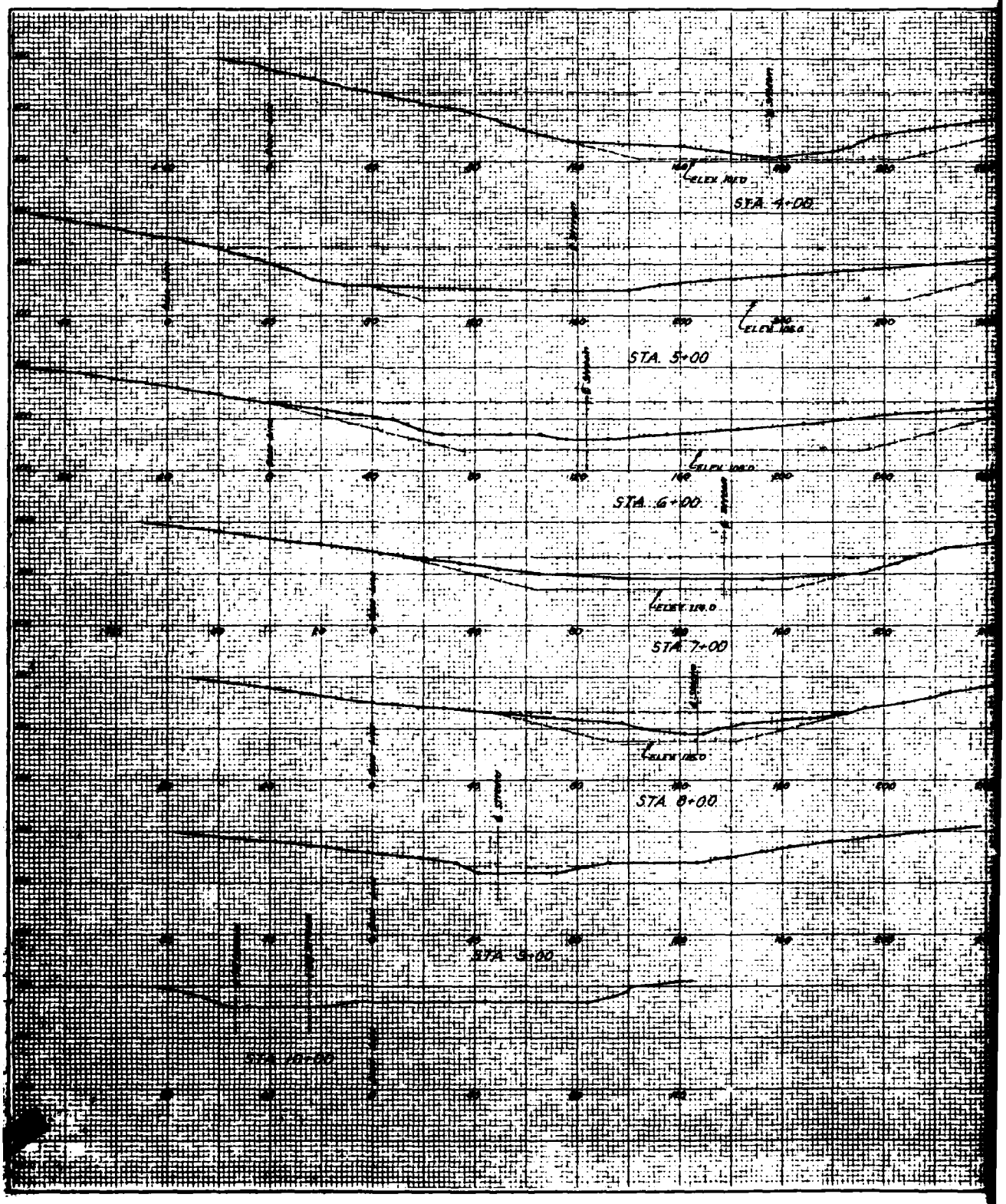
	5-6-81	APPROVED BY	JMD	5-7-87	



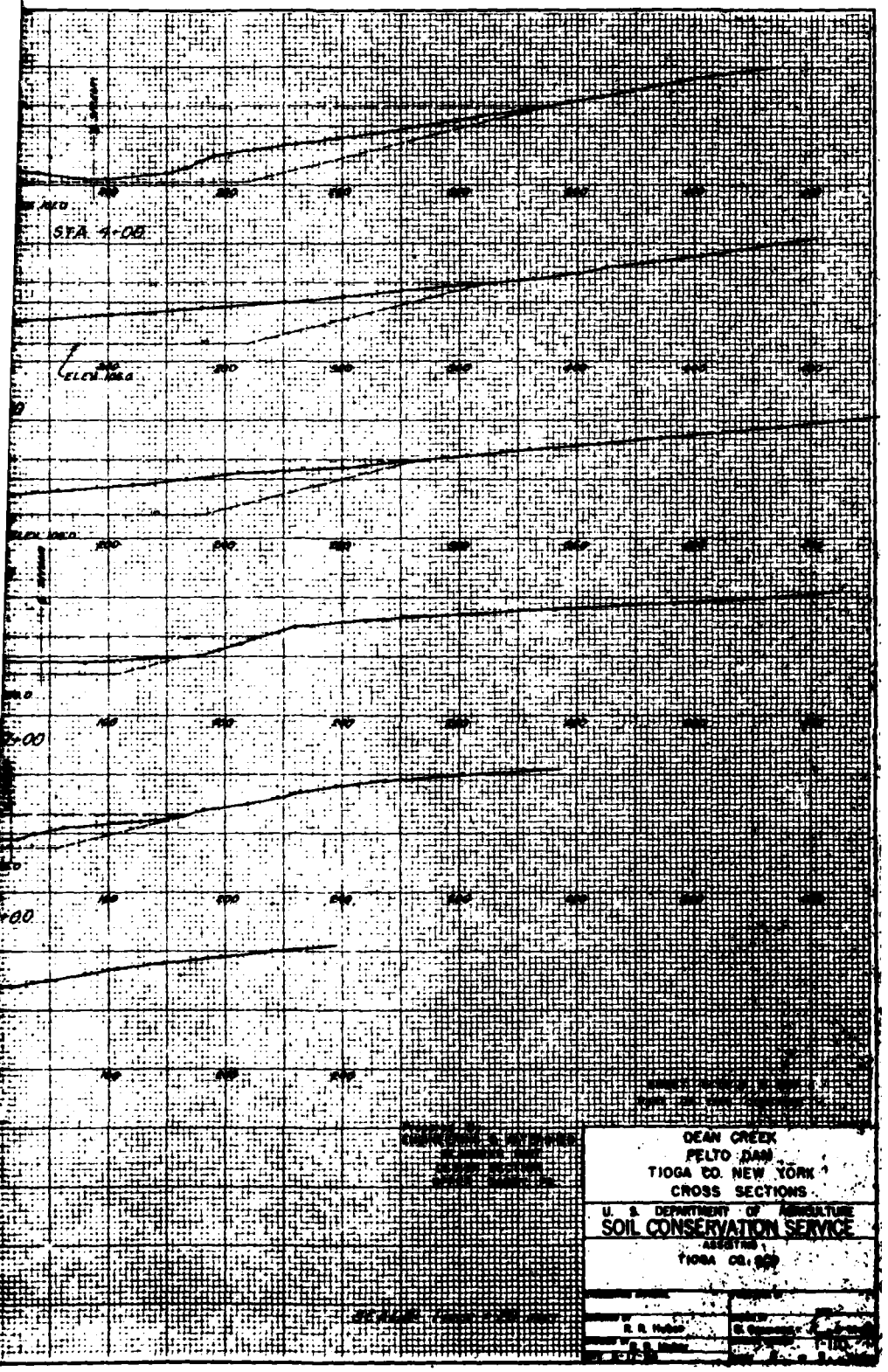


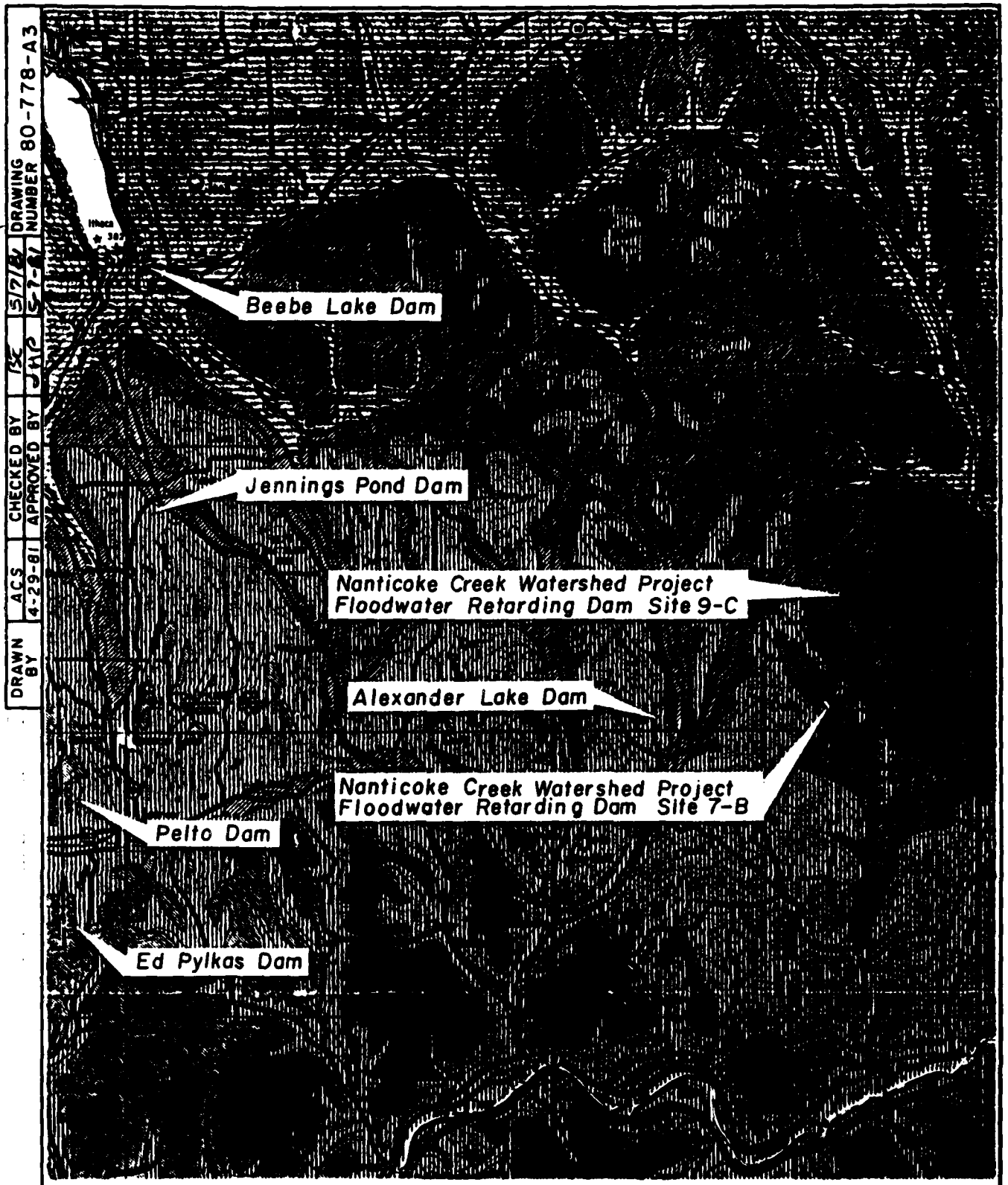
PLATE 7

2

D'APPOLONIA

APPENDIX F

GEOLOGY MAP



SCALE

0 2 4 6 8 10 miles

GEOLOGY MAP

REFERENCE

GEOLOGIC MAP OF NEW YORK, FINGER LAKES SHEET
DATED 1970, SCALE 1:250,000

D'APPOLONIA

19 1283 HERCULENE, A&B SMITH CO., PGH., PA LT1530-1079

DRAWN BY	ACS	CHECKED BY	AE	5/7/81	DRAWING NUMBER 80-778-A6
	4-29-81	APPROVED BY	JHD	5-7-81	

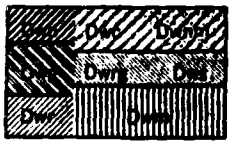
LEGEND

CANADAWAY GROUP
800-1200 ft. (240-370 m.)

Dcy — Machias Formation—shale, siltstone; Rushford Sandstone; Caneadea, Canisteo, and Hume Shales; Canaseraga Sandstone; South Wales and Dunkirk Shales; In Pennsylvania: Towanda Formation—shale, sandstone.

JAVA GROUP
300-700 ft. (90-210 m.)

Dj — Wiscoy Formation—sandstone, shale; Hanover and Pipe Creek Shales.



WEST FALLS GROUP
1100-1600 ft. (340-490 m.)

Dwn — Nunda Formation—sandstone, shale.
Dwg — West Hill and Gardeau Formations—shale, siltstone; Roricks Glen Shale: upper Beers Hill Shale; Grimes Siltstone.
Dwr — lower Beers Hill Shale; Dunn Hill, Millport, and Moreland Shales.
Dwc — Nunda Formation—sandstone, shale; West Hill Formation—shale, siltstone; Corning Shale.
Dwnm — "New Milford" Formation—sandstone, shale.
Dwrg — Gardeau Formation—shale,. siltstone; Roricks Glen Shale.
Dws — Slide Mountain Formation—sandstone, shale, conglomerate.
Dwm — Beers Hill Shale; Grimes Siltstone; Dunn Hill, Millport, and Moreland Shales

SONYEA GROUP
200-1000 ft. (60-300 m.)

Ds — In west: Cashaqua and Middlesex Shales
In east: Rye Point Shale; Rock Stream ("Enfield") Siltstone; Pulteney, Sawmill Creek, Johns Creek, and Montour Shales.

GENESEE GROUP AND TULLY LIMESTONE
200-1000 ft. (60-300 m.)

Dg — West River Shale; Genundewa Limestone; Penn Yan and Geneseo Shales; all except Geneseo replaced eastwardly by Ithaca Formation—shale, siltstone and Sherburne Siltstone.
Dgo — Oneonta Formation—shale, sandstone.
Dgu — Unadilla Formation—shale, siltstone.
Dt — Tully Limestone.

GEOLOGY MAP LEGEND

REFERENCE:
GEOLOGIC MAP OF NEW YORK, FINGER LAKES SHEET
DATED: 1970, SCALE 1:250,000

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